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ABSTRACT

This practicum was designed to initiate the use of computers in an elementary setting. There is a need for all teachers to be technologically informed about computers in order to properly and successfully develop a student's capability in technology. This practicum examines computer anxiety and what can be done to eliminate this fear. An analysis of this problem indicated the importance of providing teachers with opportunities to manipulate computers, evaluate software, and incorporate awareness of what is available and how to use it. The problem-solving task takes place in a K-2 elementary school located in a large southwestern metropolitan school district. A total of 27 teachers participated in a 12-week computer training in-service program. The training sessions focused on the use of the computer in the educational setting; basic computer concepts; available computer software; and hands-on experiences. The results of the practicum indicated that all the outcomes were attained. The number of teachers that attended the computer lab increased significantly. Teachers were more familiar with and confident using the computer system. The student population that utilized the computer lab also effectively supplemented classroom activities with a variety of computer programs. The surveys used in the study are included in the appendices. (Contains 32 references.) (Author/JLB)

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Integrating Computer Usage in the Classroom Curriculum Through Teacher Training

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by

Florence G. Barker

Cluster 52A

A Practicum I Report Presented to the
Ed.D. Program in Child and Youth Studies
in Partial Fulfillment of the Requirements
for the Degree of Doctor of Education

NOVA SOUTHEASTERN UNIVERSITY

1994

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Approved:

6/30/94

Date of Final Approval of Report

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ABSTRACT

Integrating Computer Usage in the Classroom Curriculum Through Teacher Training. Barker, Florence, 1994: Practicum 1 Report, Nova Southeastern University, Ed.D. Program in Child and Youth Studies. Descriptors: Computer Assisted Instruction/Computer Literacy/Elementary Education/Elementary School Students/Staff Development/Instructional Development/In-Service Teacher Education.

This practicum was designed to initiate the use of computers in an elementary setting. There is a need for all teachers to be technologically informed about computers in order to properly and successfully develop a student's capability in technology. This practicum examines computer anxiety and what can be done to eliminate this fear. An analysis of this problem indicated the importance of providing teachers with opportunities to manipulate computers, evaluate software, and incorporate awareness of what is available and how to use it.

The problem solving task takes place in a K-2 elementary school located in a large southwestern metropolitan school district. A total of 27 teachers participated in a 12 week computer training in-service program. The training sessions focused on the use of the computer in the educational setting, basic computer concepts, available computer software and hands-on experiences.

The results of the practicum were positive. All of the outcomes were successfully attained. The number of teachers that attended the computer lab increased significantly. Teachers were more familiar with and confident using the computer system. The student population that utilized the computer lab also effectively supplemented classroom activities with a variety of computer programs.

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CHAPTER 1

INTRODUCTION

Description of Community

The city in which this practicum took place is located in a rapidly growing southwestern area of the United States. Its present population is approximately 875,000. The city's primary source of revenue comes from the gaming industry which is very successful throughout the year.

The school district is the fourteenth largest district in the United States and is one of the fastest growing school districts with expectations of building 100 more schools in the next decade. The district operates a total of 170 schools. There are 120 elementary schools, 24 junior high/middle schools, 21 senior high schools and five special schools. The enrollment figure of this district is 136,000 students, an increase of 5.4 percent over the previous year's enrollment. More than 60 percent of the state's total public school enrollment is in this district.

Writer's Work Setting and Role

The setting of this practicum is a kindergarten, first grade, and second grade (K-2) elementary school. It is located in a predominantly Caucasian community. The present student population of the target school is approximately 580. The teacher population consists of 27 self-contained classroom educators. There are 3 kindergarten, 12 first grade and 12 second grade teachers.

The teachers employed at the target elementary school encompass a variety of technological backgrounds. On the Faculty Computer Survey (Appendix A) of the 27 teachers at the school, 6 use the computer lab on a regular basis, 5 more knew how to use the equipment but did not apply computers effectively within the classroom curriculum, and 21 teachers did not use the computer lab at all.

The writer's present assignment is teaching first grade at the target elementary school. The writer has been teaching in this school district for five years at the elementary level. During this time the writer also serves as the building senator for the teacher's union, chairwoman of the Planning Committee and professional development representative for the target school.

CHAPTER II

STUDY OF THE PROBLEM

Problem Description

According to Dalton (1989), few innovations have impacted society as greatly as computing technologies. During the past decade, learning about computers has been recognized as the survival tool for those facing the productive and competitive workplace of the future. In a society where technology is dramatically affecting everyone's lives, students must be prepared and challenged to make maximum use of the tools available to them. Unfortunately, as a result of this technological surge educators with little or no experience and understanding of computer usage are required and expected to implement the computer-based tools into their classroom curriculum. Understandably, negative teacher attitudes and outcomes have resulted regarding the teaching of technology in schools. According to Stevens (1984), indicators from the field suggest that computers for instructional purposes have not and will not receive a positive reception in many schools unless

proper implementation for teacher preparation is administered.

The target school has purchased a total of 22 computers for teacher and student usage. Fifteen of the computers are available for student access in a networked computer lab setting, six are identified as "roamers" due to the placement in different self-contained classrooms, and one computer is available strictly for teacher usage in the teacher workroom.

Teachers at the school were not spending adequate time in the computer lab with their students; therefore, the children were not receiving effective computer knowledge and experience. Computers can be an integral part of a well-rounded educational experience if utilized properly. The computer can be a valuable tool for educators and should be used as an instructional tool to supplement classroom instruction. However, due to lack of computer literacy and familiarity with computer-based operations, teachers at the target school were not using the computer lab which can be incorporated into classroom activities, and, thus, students are not receiving the required computer experience in the school setting. Hasselbring (1991) identifies three major barriers which have limited the successful use of technology in education: the installed base of computers is inadequate; good educational software is lacking; and teachers have had little or no computer education or training. If teachers possessed and were able to share their knowledge and provide effective computer experiences, academic skills and instruction could be enhanced.

In summary, the problem addressed by this practicum was that the teachers and students were not knowledgeable in computer usage. If teachers had a better understanding of the computer-based operations and the potential of computers in education, the children could receive a positive and rewarding learning experience.

Problem Documentation

In order to provide documentation of the problem, the writer used a variety of instruments. These instruments included:

1. the writer's observations of the computer lab sign-up sheet (see Appendix A);
2. informal discussions of the problem with staff members;
3. faculty survey (see Appendix B);
4. student questionnaire (see Appendix C).

While overlooking the school's computer lab sign-up sheet, the writer observed that only 11 teachers have used the lab within the past four weeks. When the writer informally discussed this issue, the teachers' overall concern was the need to become computer literate. Teachers expressed the feelings of anxiety, confusion and fear when working with computers, yet the teachers also expressed a great deal of interest in learning how to use the technology effectively and the desire to provide an adequate and productive computer experience for their students.

One faculty survey was circulated (see Appendix B). The faculty

survey was given to the 27 classroom teachers, and all surveys were completed and returned. The results of the faculty survey indicated the following: (a) Only six of the teachers used the computer lab on a regular basis with their students; (b) The teachers have not been properly trained to use the computer; (c) Over half of the staff did not know how to use the equipment; (d) Twenty-four of the teachers felt that the students were not receiving effective computer training; (e) Only six of the teachers felt confident when using the computer system; and (f) Teachers needed and wanted technology training. See Table 1.

Table 1

Faculty Computer Survey		
Question	Response	
	Yes	No
1. Are you using the computer lab facility on a regular basis with your class?	6	21
2. Have you been properly trained to use the computer as an educational tool?	2	25
3. Do you know how to properly use the equipment?	13	14
4. Do you feel that the students at this school are receiving an effective computer education?	3	24
5. Are you confident using the computer lab?	6	21
6. Do you feel that teachers need more computer-based training?	27	0
7. Would you attend training sessions?	25	2
8. What other methods would help instruct teachers when dealing with computer technology?	College training, teachers helping teachers, Easy step-by-step instructions, a computer aide	

N = 27

The last instrument used to collect data was a student questionnaire (see Appendix C). Out of the 592 questionnaires circulated, 485 were returned. The results indicated the following: (a) Approximately 82 percent of the students liked using computers; (b) Fifty-five percent of the students went to the computer lab once a month, 33 percent went to the lab twice a month and only 12 percent went to the lab more than five times a month; (c) Ninety percent of the students believed that the computer lab would help them learn; (d) Sixty-eight percent of the students believe that their teacher likes computers; and (e) Ninety-seven percent of the students wanted a computer in their classroom. See Table 2.

Table 2

Student Computer Questionnaire					
Question	Response				
	Yes		No		
1. Do you like using computers?	398		87		
3. Do you think that more time in the lab will help you learn?	436		49		
4. Does your teacher like computers?	330		155		
5. Do you want a computer in your classroom?	470		15		
2. How many times a month do you go to the computer lab?	1	2	3	4	>5
	270	160			55

N = 485

For educational practitioners computer-based technology is an exhilarating but frightening challenge to the educational system. Computer literacy is an essential skill, and teachers are the

fundamental implementors of the computer instructional program.

When the entire system of education is transforming into the technological age, educators must also guide the reform movement. Teachers must facilitate and manage the learning process. Teachers must have the knowledge of computer-based management in order to teach their students successfully and provide experiences necessary to survive in the technological age. Helping teachers to use technologies should be a priority at every school. Workshops to help teach teachers about computers provide some ways of giving educators knowledge, skills, and attitudes necessary to use technologies effectively in classrooms.

Causative Analysis

Despite the availability of computers within the school setting, computer education was not a part of the classroom curriculum for most teachers. Teachers are not providing the adequate time needed for students to adapt to new technologies. The causes for the problem were: (1) teacher training in the use of computers had not yet been provided; therefore, teachers did not have the knowledge to teach computers to their students; (2) teachers did not have the confidence to learn computer usage and application; (3) classroom teachers did not know what software is available for curriculum integration; and (4) teachers exhibited anxiety when operating the computer.

The primary cause was the lack of available training and updated instruction of newly adapted software and resources in the computer lab. All teachers were interested in expanding the uses of technology in their educational program, but feared that their lack of knowledge and experience would cause improper instruction in the technological educational setting. Teachers were reluctant to use the lab due to lack to technological understanding.

The second cause of the problem was that the educators did not have the confidence to acquire computer instruction. When teachers are insecure in their own knowledge of a particular educational area, they tend to avoid integrating that area into the curriculum. This was the case at the target school. Despite the desire that teachers had to use computers, most did not feel adequately prepared to use computers effectively in teaching; therefore, they did not.

The third cause was the unfamiliarity with the available software. If teachers were aware of what software is available, better understanding and possible implementations and integration of computers in the curriculum would have been identified. Knowledge of the computer-based resources would give teachers a better comprehension of the potential of technology in education.

The fourth cause of the problem was related to the three causes previously described. When educators have no training or experience, have no confidence, and have no background knowledge of what resources are available, reluctance to use technology is rooted in anxiety. In order to overcome the issue of computer anxiety,

computer-assisted instruction and hands-on experience was necessary.

Relationship of the Problem to the Literature

In a society where technology is dramatically affecting everyone's life, students must be prepared and challenged to make maximum use of the tools available to them. Technologies assist students as they interact with information, analyze data and solve problems. Technologies allow and invite different approaches to the teaching process. Appropriately guided, the use of computer-based instruction in schools can enhance inquiry, discovery and higher order thinking skills. So why are some computers failing in most classrooms across the country? According to Stevens (1984), if computers fail in classroom instruction, it is because teachers' attitudes and lack of skills to implement instructional computing make it difficult to effectively manage and implement computers in the classroom curriculum. A report on a study (Woodrow, 1987) investigated the attitudes of practicing teachers and student teachers regarding the educational use of computers and found that both groups of teachers believe their students should be computer literate and that teachers should be presented with an increase of services to help the process of instruction.

Technological change is seen as outpacing the capacity of educational facilities to adjust. McMeen (1984) states that

educators often find themselves unprepared to meet the demands of an accelerating technology which has been underutilized in education. One key concern is that technology's push has increased the demand for educators to respond with new and more effective instructional methods. Fox (1986) states that technological innovation will continue at a rapid rate for the foreseeable future, and it will continue to drive educators to make major changes in the way children are taught. According to Razik and Nalbone (1992), America's ability to compete in the world's marketplace rests on the education of its people, but the educational system needs to be improved to assure a bright future. This statement is a reflection of more than 50 recent national studies which began with the report of the National Commission on Excellence in Education in 1983. Advocates of the educational profession must, by necessity, recognize the role of technology and the need for significant change in education.

Most of the effort to reform education with technology has largely been the responsibility of teacher training institutions. Roberts (1985) states that the preparation of teachers follows a typical pattern that includes general education, preprofessional studies, academic specialization and professional studies. However, the Office of Technology Assessment (OTA) reexamined the potential role of new information in education. One survey of 130 teachers in educational institutions, for example, indicated that less than one-half of them were offered any kind of inservice training on microcomputers. The survey findings support the fact that there is

very little training on microcomputers available for practicing teachers or those majoring in education in preparation for teaching (Tetenbaum and Mulkeen, 1984).

America is shifting from an industrial age to a technological age, and educational observers are questioning the ability of the nation's schools to prepare its youth to deal with the changing society. Schools, by necessity, must prepare students for life in an information-based society through the implementation and integration of technology into the elementary school curriculum and support services. In order to facilitate this learning process, ongoing resources, training, and support for staff pertaining to current and future technologies must be provided. Institutions are acquiring microcomputer technologies faster than they can learn how to use them. We have spent millions of dollars acquiring computers, but we have spent pennies providing computer training for classroom teachers (Finkel, 1990).

The focus of computers in education has centered on what appear to be considerable products and implementation of software that help the learning process for students. Teachers show great enthusiasm for the use of computers, but find it difficult to integrate technology into the curriculum. In part, that's the fault of the schools which have greatly ignored teacher training and make few efforts to rethink curriculum in light of what computers can do to enhance instruction and learning ("Computers in School," 1989).

Recent reports suggest that only one-third of all K-12 teachers

have had even ten hours of computer training (Hirschbuhl, 1990). Most of the training consisted of general computer introduction courses rather than more sophisticated and productive issues of how to integrate computer usage into the curriculum. Increasingly, new technologies will demand more than the educational system is ready for. Dwyer, Ringstaff, and Sandholtz (1991) depict the struggle new teachers have when trying to accommodate new technology in the classroom. Hirschbuhl (1990) reports that unless students are taught by teachers who are skillful in the integration of technology within the curriculum, computers will not achieve optimum results.

While technology and training are not the only facets of focus, they are viewed as critical levers for the improvement of education. Many observers see technology and its application in education as an important catalyst for change that is long overdue (Roberts, 1985).

Why isn't technology having greater success with education? According to the OTA, the answer to this question is that the vast majority of teachers today have had little or no training in the use of technology. The push to make new teachers technology proficient is confused. According to the 1987 State Education Technology Survey conducted by the OTA, only 50 percent of the states require or recommend that new teachers receive technological preparation. As a result, new teachers are not receiving the knowledge necessary to teach computers to students. Bruder (1989) states that the majority of teachers coming out of undergraduate programs do not have the technology preparation school districts expect.

In a recent study (Handler, 1993) results indicate that 89 percent of all teacher education programs offer some opportunity for computer training to their students in undergraduate programs. Nevertheless, only 29 percent of the respondents of a national survey of education majors feel adequately prepared to teach with computers. Educational institutions have recognized the need to integrate computer technology into all areas of study; yet, teachers are not being instructed on how to use the technology in effective teaching and therefore are unable to prepare their students to deal with the technological age of the future.

Another study (Handler, 1993) collected data on 133 education graduates. The collected data described self-perceptions of purpose of preservice computer experiences and the value of these experiences to their professional preparation. The respondents were classified into two groups: (1) teachers who felt prepared to teach computers to students, and (2) those who did not perceive themselves prepared. The results indicated that only 18.8 percent of the total respondents felt prepared to teach students how to use computers. Typically, teacher education programs only require one introductory computer course. It is the one course which is commonly typified by the basic introduction of tools, software, hardware, and perhaps programming. When training is left for educational settings to deal with, effective staff preparation courses are not readily available. In fact, most computer courses given to preservice teachers are frequently taught by technology specialists who do not focus on software integration as an

instructional tool. Despite the many problems with undergraduate technology training, it is a necessary and very important step in education. District requirements are one way of making sure future teachers are prepared to use computers. Unfortunately, most undergraduate programs do not provide enough time to cover the scope of technology use in the classroom (Bruder, 1989).

The development of technology represents an increased challenge for schools to not only use computers, but also prepare teachers to incorporate technology into traditional school subjects. In spite of the number of computers available in educational institutions, the integration of technology remains a problem. Teachers need to be ready to teach computers to students. Lang (1992) refers to computer readiness as a state of awareness, motivation and prior knowledge pertaining to computing and computers and the teacher's ability to apply this in the classroom environment.

Overall, teachers in recent years show favorable attitudes toward technology. Not surprisingly, teachers with knowledge of computers and computer experience have a more positive outlook of the potential of computers in education. Dupagne and Krendele (1992) stress the importance of training to stimulate teachers' computer use and to foster favorable attitudes toward computers. Also, research indicates that teacher attitudes toward computers may also influence student achievement; that is, students instructed by teachers with positive attitudes toward technological

advancements demonstrated a higher quality performance.

Developing computer competence does not only affect attitude, it affects the overall outcome of learning experiences. New participants in technology find themselves with a lack of confidence and high levels of anxiety when dealing with technology. Kennewell (1992) describes this fear of technology as "computerphobia." Bloom (1985) lists a number of fears new computer users may have: breaking the machine, looking stupid, lack of time to learn the operation and a sense of futility. According to Tetenbaum and Mulkeen (1984) most teachers currently in the educational system were not raised in the electronic era, and many are uncomfortable with anything "mechanical." Many educators are afraid not so much of machines, but of their own ignorance and lack of understanding. Kennewell (1992) examined various possible cause of computerphobia:

1. the rapidity of technological change;
2. the apparent relationship with mathematics which also induces anxiety; and
3. contact with software which is designed to be used by computer experts.

Research has found that those teachers exhibiting anxiety will rely on those with greater expertise to manage the technological resources. All teachers need to become competent in the use of microcomputers to overcome computerphobia.

Technology can transform education. It is essential that

computer application be used as a tool for educational reform. The initial and inservice training of teachers is the key to guarantee success. Schools should not be upset by the new technologies, but should incorporate them in full awareness of their potential for the quality of teaching. It is very important to observe the needs educators have when trying to develop, implement, and integrate a program incorporating computers. Teacher training is becoming a vital factor when pondering the problems of computer teaching capabilities. There must be an unprecedented effort in the organization of inservice training so that teachers are updated in the latest developments in new technologies. One inservice training is not enough to properly prepare teachers to use computers. Continued professional education is the key to long term development and success of a teacher's ability to use technologies (Sturdivant, 1988). The decisions we make today about education and technology will shape America's educational capabilities of tomorrow (Mecklenburger, 1988).

CHAPTER III

ANTICIPATED OUTCOMES AND EVALUATION INSTRUMENTS

Goals and Expectations

The following goals and outcomes were projected for this practicum. The first goal was to have the teachers gain the knowledge and understanding of technological operations and, therefore, be able to use the computers. The second goal was to increase the teachers awareness of the educational computer programs available for the integration of computer education in the classroom curriculum.

Expected Outcomes

1. Twenty-two of the 27 classroom teachers will allocate a minimum of 40 minutes a week in the computer lab with their students to enhance computer learning as evidenced by documentation of computer lab sign-up sheets. (See Appendix A.)
2. Twenty-two of the 27 classroom teachers will become familiar

with computers and feel confident integrating computers with classroom instruction as evidenced through informal questioning. (See Appendix D.)

3. Eighty percent of the students will visit and utilize the computer lab as a supplemental tool to learning as evidenced by computer lab sign-up sheets (see Appendix A) and frequent observations (see Appendix E).

Measurement of Outcomes

In order to successfully procure the evidence necessary to determine teacher usage of the computer lab, the writer chose to monitor the lab sign-up sheet which, in itself, would verify attendance. (See Appendix A.)

Objective two was to be measured through informal questioning in which teachers were presented with verbal inquiries regarding computer knowledge, specific software, and personal disclosures of usefulness and confidence when working with computers. (See Appendix D.)

In order to assess student utilization and acquisition of specific skills through the use of technology, follow-up documentation of computer lab sign-up sheets and observations of class participation were to be established (see Appendices A & E). The documentation and observations were to be used to monitor lab usage and proper computer application as a learning tool to integrate and increase

student learning throughout the curriculum.

CHAPTER IV

SOLUTION STRATEGY

Discussion and Evaluation of Possible Solutions

Teachers and students at the target school were not knowledgeable in computer usage. In order to facilitate a successful computer program, teachers must be computer literate. Lewis (1991) notes that the problem for educators is understanding the new and emerging technologies and the promises they hold. Technology provides a tool that can be used to achieve many different purposes. But while technology can provide a catalyst for educational reform, alone, it cannot guide change which must be driven by vision.

Stevens (1984) states that staff development is an essential component that is time consuming, expensive and the most complex part of the process of implementing computers into the instructional program of a school, but must be done. The most promising development regarding the future of educational computer

use would be the integration of computers in education. A review of the literature disclosed different approaches that schools could take in order to initiate and assure the use of technology. The training of teachers was the focus of most of the possibilities.

Le Compagnon and Leydon (1991) discussed a federally funded program that provided teachers in New Hampshire ongoing training of computer use, and they defend the argument that training is an investment with a large payoff of successful student acquisition of knowledge. Schools can promote computer literacy among teachers by providing concrete support, making in-service training comprehensive and long-term, and offering opportunities for participation. The cost of what needs to be paid today is no comparison to the cost our country may face in the future.

One of the major imperatives, recognized in the related literature, is for the nation's schools to give students an understanding of computers through effective, integrated computer applications. Beard (1993) states that many of the general shortcomings of education and training apply greatly to computer education. According to Darby (1992), there is an unwillingness of universities to recognize and reward effort put into improving teaching, whether it be by utilizing or by producing computer-based teaching and learning materials. Hurd (1988) indicates that the resulting curricular lag in universities causes even recent graduates of professional programs to find themselves lacking adequate understanding of technologies that they will be expected to use on a

routine basis. The new technologies that will give teachers the freedom to teach in a variety of innovative ways are already available, and schools must take on the responsibility of properly training teachers.

The development of a comprehensive and effective training program is crucial. Training provides a means to overcome computer resistance. Resistance, according to Roberts (1985), can be overcome by providing computer presentations that build awareness of the potential of technologies in education, hands-on experiences with microcomputers aimed at emphasizing user "friendliness," demonstrations of classroom simulations of implementation, and role playing. Also recognized by Roberts (1985) were efforts used in the development of teacher computer competency. These included workshops, seminars, and special sessions on computers in the classroom. The findings indicated that any and all projects selected must demonstrate the use of technology to improve education.

The key components of managing a successful computer training program are given by Dalton (1989).

1. Build cooperative computer-based learning environments.

The concerns that teachers have about impersonal learning can be overcome by encouraging teachers to work together.

2. Integrate software.

To help teachers feel better about using the computer, software presented should reinforce curriculum objectives. Software selections should be introduced to supplement their teacher

textbooks, in such a way that extends traditional classroom instruction.

3. Provide teacher training in the use of innovation.

When teachers are lacking confidence to integrate technology into their program, they tend to not apply the innovation. Schools need to provide teachers with skills and confidence necessary to use computers. This includes free-time, hands-on experience, and freedom to explore.

4. Let the individual teacher make the decision.

This suggestion infers that teachers should never be given the power to ignore reform, but they should be allowed to progress toward reform at their own pace. Many teachers have a great deal of anxiety when dealing with new technology. Training should not be forced; it should be perceived as nonthreatening.

5. Define new roles for teachers.

Teachers need help in understanding that their role in the classroom is more than lecturer. Teachers are counselors, developers, and managers.

6. Design computer activities that allow teachers to lead.

Computers can deliver content but should not exclude teacher interaction. Computer activities should allow learners to respond and participate in simulations.

7. Employ educational technologists as change agents.

Educational technologists are in a position to guide and oversee change. The individual who is capable of applying technology

successfully in a school setting can implement the change and motivate those who will be affected by the innovation.

8. Train selected school personnel as educational technologists.

The best change agents can be those teachers specially trained. The role of change agent begins with innovative teachers, and these trained teachers can play a considerable role in the success of technological reform.

Description of Selected for Solution

The writer used the literature review to help develop the format for the practicum solution. The approach selected contained the following items: (1) incorporate a peer coaching plan; (2) in-service training; (3) software presentations; and (4) specialty presentations for those interesting in becoming a building technologist.

The writer had chosen to implement a peer coaching plan in order to create a cooperative computer-based learning environment in which teachers help teachers overcome computer illiteracy. The second approach was in-service training. This is the training which provided teachers with the presentations that raised awareness of the technological potential in education. The third solution which was implemented was software presentations. The integration of software helped teachers feel better about using the computer within the classroom curriculum. The final solution was special

training given to those teachers interested in becoming a site specialist of technology. The site specialists would then become change agents within the school.

Report of Action Taken

The steps taken in implementing this practicum included an optional peer coaching opportunity in order to facilitate a cooperative learning environment for teachers, in-service training as documented in Appendix F, software presentations, and specialty training for hopeful building technologists. During the implementation of this practicum, the writer took steps necessary to enable the teaching staff to be actively involved in the in-service process, thus creating a common thread of support and motivation among teachers. According to Wagner (1993), goals and values of the task at hand must be defined first; then ask people how they want to work together, and what they need to get the job done. Suggestions, comments and requests were all taken into account when creating the training schedule and presentations.

The implementation of the solution strategy began with the writer notifying the teaching staff of the available technology in-services. They were informed of days, times and locations as well as the planned presentations for the particular days. One specific recommendation was that the teachers select the training sessions they believed would best suit their needs. Because so many in-

service trainings were planned, staff members were at different places in their knowledge of available computer programs. A definite time schedule was considered important because many educators had previous engagements or plans for future projects.

During week one of the practicum, 25 teachers, including the school site administrator, were present. A program overview was presented by the writer, and teachers were encouraged to preregister for future in-service training programs. The first solution strategy, peer coaching, was also introduced. Teachers must have time for collaborative reflection and shared training in order to collectively teach skills to one another and to continue learning. Staff members were given the option of peer tutoring if that seemed a viable resource for them. If that were the case, the teachers were then given the opportunity to independently find a partner who best met their needs. Each team was informed that the peer coaching experience was to be done on their own time which enabled the team to schedule meetings whenever needed. While observing this cooperative experience, the writer noticed that in a block of 15 minutes, 8 of the teachers had already found their partner. Raywid (1993) states that there is a need for all schools' faculty members to reflect together on their practice and on their needs of fellow teachers' knowledge. Once teachers are trained and programs are established, the learning should not come to a halt. Learning and sharing ideas is an ongoing process.

During weeks two through eight, the writer continued to present

the scheduled in-service training programs. Within this time frame the 12 sessions pertaining to staff development were given. Programs such as LinkWay, Microsoft Works, LANSchool and Express Publisher were provided to enable teachers to gain the knowledge for other uses of the computer system such as grading, filing, database management, spreadsheets and word processing.

To aid in the training process of the above stated programs, the writer realized that computer companies, software developers and professional organizations provide training and support for teachers to use computers in their curriculum and personal needs. Computer companies have a direct economic interest. "It makes good business sense to instil in teachers a sense of loyalty to a particular type of computer" (Fulton, 1989, p. 15). Expense paid training sessions are looked upon as worthwhile investments for companies. "Companies are gambling that, with increased training, teachers will become more informed and enthusiastic users of computers, an enthusiasm which pays off in increased software sales, including sales of their titles" (Fulton, 1989, p. 16). With this knowledge the writer located the nearest International Business Machines Corporation (IBM) computer company. To the writer's satisfaction the IBM consultant for schools was more than willing to support our teacher training efforts. The consultant prepared and supervised the training sessions which dealt with staff usage.

During week nine the writer organized a mid-point staff discussion in order to refine the training program and make any

changes necessary to meet the needs of staff members. Fortunately, due to the enthusiasm and satisfaction of the teachers, no changes were necessary. Every session remained exactly as planned.

During the next two weeks in-service training continued. Much more emphasis was placed on curriculum integration and computer usage. The teachers became very excited to discover the many ways in which to integrate computer programs with classroom instruction. The writer knew at this point how valuable these training sessions had become. Teachers even went as far as to state the need for continued professional growth sessions in the future to keep up with the technological transformations. Undoubtedly, hands-on experience is the single most valuable to overcome computerphobia. Widmer and Parker (1983) suggested a number of ways to help reduce anxiety about computers, but stated that the most important method is to give much hands-on experience. For teachers Williamson (1983) stated that the technique to overcome computerphobia is to attend a computer workshop and get hands-on experience.

During the final week of implementation a final evaluation was provided through informal discussion, questioning and observations of computer lab sign-up sheets. The writer was quite pleased to acknowledge the positive progress that the staff members had made. Due to time constraints and the closure of the school year the two individuals who were interested in becoming school site technological specialists agreed to receive extra training during the

upcoming summer to be prepared for the following school year. Once again, thanks to the IBM consultant, the training will be performed at the IBM headquarters located within the community.

Upon the completion of the training sessions, teachers noticeably took advantage of what the computer lab had to offer. The practicum was a success, and all parties involved were very satisfied with the results.

CHAPTER V

RESULTS, DISCUSSION AND RECOMMENDATIONS

Results

There was a need for teachers to become computer literate in order to operate the computers and facilitate effective integration of technology and the classroom curriculum. The problem that existed at the writer's work site was that the teachers were not spending adequate time in the computer lab with their students; therefore, the children were not receiving effective computer knowledge and experience.

The purpose of this practicum was to provide a variety of techniques to ensure that the educators in the target school would have the opportunity to gain knowledge of computers and receive plenty of technological hands-on experience to combat the anxiety caused by computer illiteracy. Peer coaching, in-service training, software presentations and specialty presentations for hopeful building technologists were all strategies utilized by the writer to

encourage teachers to use the available computers with their students.

Outcome 1 was measured by the documentation of computer lab sign-up sheets. It further stated that success would be demonstrated if 22 of the 27 classroom teachers allocated a minimum of 40 minutes a week in the computer lab with their students. The computer sign-up sheet indicated that 25 of the 27 teachers attended the computer lab at least 40 minutes a week.

Outcome 2 was measured by informal questioning of the teachers after the completion of all training sessions. Success was evident if 22 of the 27 teachers stated they were familiar with computers, confident and comfortable using computers, and comfortable the idea of implementing the computer system within their classroom curriculum. Twenty-five of the 27 teachers questioned felt extremely well prepared to use the computer lab with their students. Most even stated they were excited to use the computers for personal use as well as professional use. See Table 3.

Table 3

Post Faculty Computer Survey

Question	Response	
	Yes	No
1. Do you know the basic functions of a computer?	27	0
2. After the training program, do you feel confident in using the computer as a learning tool with your students?	25	2
3. What software do you find most beneficial for classroom use? All programs are adoptable for curriculum integration.	25	2
4. Can you describe an effective method you used in order to integrate software with classroom instruction? All alluded to the fact that finding curriculum and theme similarities was a very effective tool for integration.	25	2
5. Do you think there are enough programs to choose from?	26	1
Do you feel confident in using all of them?	25	2
6. Do you feel adequately prepared to teach computer usage to your students?	25	2
7. What further training (if any) would you suggest? They suggested more inservice training year around or whenever new programs are purchased.	26	1
8. Other comments: Many talked about the excitement of computers for their own personal use.		

N = 27

Outcome 3 was measured by frequent computer lab observations to ensure effective usage and documentation of computer lab sign-up sheets. Success was demonstrated if 80% of the students visited and utilized the computer lab as a supplemental tool for learning. On a regular basis 96% of the students at the target school visited and utilized the computer lab effectively and efficiently. See Table 4.

Table 4

Question	Student Observation Checklist	
	Yes	No
1. The student logs on the computer in proper sequence.	570	22
2. The student logs off the computer in proper sequence.	564	28
3. The student demonstrates proper usage of the computer system.	568	24
4. The student demonstrates understanding and involvement when using the computer.	555	37
5. The student applies himself/herself when mastering the computer task at hand.	546	46

N = 592

Success was attained for all three of the objectives.

Discussion

The strategies implemented to increase computer lab usage and teacher technological knowledge were successful. Without a motivated and cooperative staff, this practicum would not have yielded a positive result. The staff members were enthusiastic to try any strategy or method to produce professional growth as well as personal growth. Many of the teachers at the target school were not raised or taught in the technological era. For the most part, they were raised in the traditional schools years ago. The writer was relieved and encouraged to work with such a flexible group of educators. Although many of the teachers were computer illiterate,

they realized the importance of computer knowledge for themselves and especially their students. Peck and Dorricott (1994) have stated that technological tools can foster students' abilities, revolutionize the way they think and work and give them new access to the world. The educators at the school site recognized the need for computer training and offered valuable information to the writer to help improve the learning situation being presented to colleagues.

The new climate at the school site was welcomed warmly. Technology was focused as a power tool for educators. Students were immersed in authentic learning. Through the learning process involving computers, students learned concepts at an alarming rate. Teachers frequently reported to the writer on specific incidences of success. The most memorable was a child who could not read due to lack of attention span. Through the use of computers, the child was motivated and constantly interacting kinesthetically with an object; therefore, learning became more interesting and more compatible with the child's learning style.

All of the strategies employed were found to enhance teacher knowledge and willingness to implement technology with students. The writer found that, through shared decision making, the teachers felt empowered to enhance their own learning and benefit from it. This increased positive school morale and actually brought teachers closer together. Everyone seemed to be working toward the same goal, the same vision of success. Peer coaching just elevated this atmosphere.

Recommendations

1. The first recommendation is to define technology training as a program which provides teachers with opportunities to experience and develop a better understanding of the computer system.
2. the second recommendation is to make sure that when implementing a school-wide program, as many fellow colleagues as possible are involved to ensure participation and empowerment.
3. The third recommendation it to not only communicate on paper, but also verbally. Approaching each individual and speaking directly toward the individual just adds to personal involvement and belonging.

Dissemination

With the emergence of computers in education the focus of teacher education programs to adequately prepare educators to successfully apply technology in classrooms is directly appointed for the schools to handle. The selected IBM consultant was the target school's answer to a year-long effective training program and is expected to continue for the following year if needed. For the hopeful school-site technologists, summer training will be provided at the IBM corporation.

Consideration is being given to having this writer or another technological advocate provide further in-service training for the

staff members next year and perhaps extending the findings of this practicum with other educators in schools within the district..

When the entire system of education is transforming into the technological age, educators, such as the writer, must guide the reform movement. Teachers at school sites must facilitate and manage the learning process of fellow colleagues. One training program is not enough to properly prepare teaches to use computers. Continued professional education is the key to long term development and success of a teacher's ability to use technologies (Sturdivant, 1989).

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APPENDIX A
COMPUTER LAB SIGN-UP SHEET

COMPUTER LAB

___/___/___ -- ___/___/___

Monday	Tuesday	Wednesday	Thursday	Friday
9:05 - 9:45	9:05 - 9:45	9:05 - 9:45	9:05 - 9:45	9:05 - 9:45
9:50 - 10:30	9:50 - 10:30	9:50 - 10:30	9:50 - 10:30	9:50 - 10:30
10:35 - 11:15	10:35 - 11:15	10:35 - 11:15	10:35 - 11:15	10:35 - 11:15
11:20 - 12:00	11:20 - 12:00	11:20 - 12:00	11:20 - 12:00	11:20 - 12:00
12:15 - 12:55	12:15 - 12:55	12:15 - 12:55	12:15 - 12:55	12:15 - 12:55
1:00 - 1:40	1:00 - 1:40	1:00 - 1:40	1:00 - 1:40	1:00 - 1:40
1:45 - 2:20	1:45 - 2:20	1:45 - 2:20	1:45 - 2:20	1:45 - 2:20

APPENDIX B
FACULTY COMPUTER SURVEY

COMPUTER SURVEY

To: Staff

From: Florence Barker

Staff: please fill out the following survey and return it in my mailbox. There is no need to write your name on this survey. Please answer with all truthfulness. Thank you.

1. Are you using the computer lab facility on a regular basis with your class? _____

If not, please explain.

2. Have you been properly trained to use the computer as an educational tool? _____

3. Do you know how to properly use the equipment? _____

4. Do you feel that the students at this school are receiving an effective computer education? _____

5. Are you confident using the computer lab? _____

If not, please explain.

6. Do you feel that teachers need more computer-based training? _____

7. Would you attend training sessions? _____

8. What other methods would help instruct teachers when dealing with computer technology?

APPENDIX C

STUDENT COMPUTER QUESTIONNAIRE

Student Computer Questionnaire

To: Staff

From: Florence Barker

Staff: Please take the time to complete this questionnaire with your students. No names are necessary. When finished, please return in my mailbox. Thank you.

Directions: Draw a circle around your answer.

1. Do you like using computers?

Yes No

2. How many times a month do you go to the computer lab?

1 2 3 4 More than 5

3. Do you think that more time in the lab will help you learn?

Yes No

4. Does your teacher like computers?

Yes No

5. Do you want a computer in your classroom?

Yes No

APPENDIX D

POST-FACULTY COMPUTER QUESTIONNAIRE

Post Faculty Computer Questionnaire

1. Do you know the basic functions of a computer?
2. After the training program, do you feel confident in using the computer as a learning tool with your students?
3. What software do you find most beneficial for classroom use?
4. Can you describe an effective method you used in order to integrate software with classroom instruction?
5. Do you think there are enough programs to choose from?

Do you feel confident in using all of them?

6. Do you feel adequately prepared to teach computer usage to your students?
7. What further training (if any) would you suggest?
8. Other comments:

APPENDIX E

STUDENT OBSERVATION CHECKLIST

Student Observation Checklist

- | | | |
|--|--------------------------|-------------------------|
| 1. The student logs on the computer in proper sequence. | <u> </u>
Yes | <u> </u>
No |
| 2. The student logs off the computer in proper sequence. | <u> </u>
Yes | <u> </u>
No |
| 3. The student demonstrates proper usage of the computer system. | <u> </u>
Yes | <u> </u>
No |
| 4. The student demonstrates understanding and involvement when using the computer. | <u> </u>
Yes | <u> </u>
No |
| 5. The student applies himself/herself when mastering the computer task at hand. | <u> </u>
Yes | <u> </u>
No |

APPENDIX F
COMPUTER IN-SERVICE TRAINING AGENDA

Computer In-Service Training Agenda

Session One

Introduction

1. Program Overview - In-Service Sign-up
2. Peer Coaching - Partnering Up for Success

Session Two

Focus Area: LinkWay

1. Introduction
2. Business Applications (Accounts, general ledger, journal, letters and memos)

Session Three

Focus Area: LinkWay

1. Review
2. Storybook Presentations (Illustrations, animation, programmed presentations, sound presentation.)

Session Four

Focus Area: Microsoft Works

1. Introduction
2. Learning Works
3. The Word Processor

Session Five

Focus Area: Microsoft Works

1. Review
2. The Spreadsheet
3. Charting

Session Six

Focus Area: Microsoft Works

1. Review
2. The Database and Reporting

Session Seven

Focus Area: Microsoft Works

1. Review of Program
2. The Word Processor
3. The Spreadsheet
4. Charting
5. The Database and Reporting

Session Eight

Focus Area: LANSchool

1. Introduction
2. The Teacher Program

Session Nine

Focus Area: LANSchool

1. Review
2. The Student Program

Session Ten

Focus Area: LANSchool

1. Review
2. The CStudent Program

Session Eleven

Focus Area: LANSchool

1. Review
2. The Peek Program

Session Twelve

Focus Area: Express Publisher

1. Introduction
2. Newsletters, Reports, Flyers, Announcements, Presentation Graphics

Session Thirteen

Focus Area: Express Publisher

1. Review
2. Importing Pictures and Text from other graphics and word

processing programs

Session Fourteen

Focus Area: Exploring Measurement

1. Introduction
2. Explore, Measure, Follow the Clues, Read the Graph
3. GraphMaker Tool

Session Fifteen

Focus Area: Exploring Time

1. Introduction
2. Explore, Match the Time, Set the Time, Before and After, Make a Story

Session Sixteen

Focus Area: Exploring Money

1. Introduction
2. The Money Board and Sticker Store

Session Seventeen

Focus Area: Stories and More

1. Overview of Program
2. I Need a Lunch Box
3. The Little Red Hen
4. The Happy Day
5. The Carrot Seed

Session Eighteen

Focus Area: Stories and More

1. Peter's Chair
2. The Three Billy Goats Gruff
3. If You Give a Mouse a Cookie
4. The Gunnywolf
5. Morris the Moose

Session Nineteen

Focus Area: Stories and More

1. The Hare and the Tortoise
2. Owl at Home; Owl and the Moon
3. Donna O'Neeshuck Was Chased By Some Cows
4. The Lion and the Mouse
5. Marvin's Mouse House Mess

Session Twenty

Focus Area: Stories and More

1. Frog and Toad Are Friends; The Letter
2. Through Moon and Stars and Night Skies
3. Stories and More Resource Materials